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Health Education – Responsibility – Changing Attitude. A New Pedagogical and Methodological Concept of Peer Education

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Abstract. Health-related attitudes can be modified and supported most effectively at young ages. Young generations require more interpersonal and interactive pedagogical methods in programs engaged in health promotion, as well. The aim of the authors was to get an insight into a relatively novel pedagogical method, called peer education. This multilateral activity is focusing the procedure on attitudes, experience, and motivation of youngsters in connection with health promotion programs and community service work. In this article, the authors describe 1) the theory, origin, and principal influences of peer education compared to traditional teaching methods and 2) the new, efficiency-oriented and science-based methodology of health education program.

Keywords: peer education, health promotion, pedagogical method, measuring the effectiveness of health promotion program

Introduction

After more than 25 years of the transition, the health conditions of post-Soviet countries are still alarming. Among the East-Central European countries, Hungary's data on life expectancy, mortality, and morbidity is even worse (Bálint & Kovács 2015, Kovács & Tóth 2015). Besides the poor health conditions, health expenditure is low (i.e. 7%, OECD 2015) and effective health development programs are sporadically accessible. For this very reason, preventive and powerful health education initiatives are strikingly needed. Peer education could be one of the most potential and cost-effective health development methods improving the quality of health both at societal level and in a smaller social environment.

An increased need for effective health education programs was found by one of our former quantitative surveys among secondary school students (N=898) between the ages of 14 and 17 in 2015 (Feith et al. 2016). On the one hand, this study aimed to gain an insight into the attitudes and experience of youngsters in connection with health promotion programs. On the other, it wanted to examine the motivation and experience towards compulsory community service work.[1] Finally, its goal was to become acquainted with students' opinion about the special methodology of the planned health promotion program (authentic knowledge transfer, creativity, practice-oriented, multilateral interactions between younger generations).

According to the experience of 44.7% of the students, health promotion and prevention programs were not interactive at all (it was evaluated as simply boring), and there were no group tasks and games. 64.3% of them said that most of the programs were merely lectures; however, 71.1% claimed that these health and prevention programs still make sense. The majority of the participants would also support that a similar age-group could hold the health promotion and prevention programs for them. Most of them are interested in participating in programs through the community service work, where they would deal with younger children – preferably with kindergartners (52.7%) and with primary school students (47.9%) – with the help of university students, and interestingly, only every fifth person was clearly dismissive.

1 It is compulsory for secondary school students because it is needed for the secondary school graduation. Secondary school students must account for doing 50 hours of community service work. Many people identify community service work with voluntary work, whereas there is a difference between the two concepts in terms of motivation and internal impulse. Volunteering comes from a person's free will and internal motivation, while community service is compulsory and pedagogically initiated. Therefore, community service could hardly be regarded as a classic case of voluntary work because it is not an activity without interest but a criterion for secondary school graduation. Free choice, which is the basis of volunteering, is only realized in the act of choosing the activity in community service work. Both activities serve a common purpose and in both cases the goal is to strengthen sensitization and community commitment and support the participants in taking responsibility.

The reason why students would take part in this program was mostly the possibility of passing over useful knowledge with creative activities to the younger children. The rejection of participation was mostly due to the indiscipline of younger children and the inexperience in and the fear of responsibility. Furthermore, community service work would provide a good framework for organizing contemporary health care and prevention programs, as 82.8% of the participants thought when asked about compulsory community service work that "to help" is good. Therefore, building on this attitude of theirs is an additional opportunity to motivate them (Feith et al. 2016).

Our educational and research program is based on this preliminary study. This paper aims to provide a short literature review of peer education with a focus on its pros and cons and to present the methodology of a new health promotion concept.

Peer education

In the past fifty years, peer education has become a very popular pedagogical tool, especially in the field of health education; however, the term itself covers heterogeneous approaches and implementations. In the scientific literature, there is a lack of definitional clarity at least in three aspects: the notion of "peer", the aims and the methods being applied, and the form of "peer involvement" (Milburn 1995, Shiner 1999).

The term "peer" is primarily used with reference to adolescents or youth, and most of the existing programs are realized among this age-group. Although age could be one of the most important elements of defining peer, peer education reaches a wider audience. There are numerous initiatives among disadvantaged groups such as sex workers, LGBT persons, or patients suffering from the very same disease. To summarize, peer could be defined as members from the same social group such as age, ethnicity, gender, regular income, social status, or subcultural membership (Gould & Lomax 1993, Svenson et al. 1998, Shiner 1999, Turner & Shepherd 1999, Parkin & McKeganey 2000). Shared cultural background between peer educators and their target group has a significant influence on the effectiveness of peer education (Milburn 1995). Also, some of the studies suggest that in the case of adolescents peer educators should be 2–3 years older than their peers and underline that supervision is a crucial element for peer educators (Damon 1984, Adamchak 2006).

The scale of the applied methods in peer education is broad. It ranges from formal tutoring in a school to a very informal group discussion or a one-to-one counseling. Both the topic and the target group differentiate the methodology; nevertheless, the objective of peer education is always sharing information,

values, or attitudes related to a special subject (Gould & Lomax 1993, Sloane & Zimmer 1993, Shiner 1999, Turner & Shepherd 1999).

The role of peer educators also varies considerably in the process of peer education. According to Shiner (1999), there are two key dimensions at the level of involving peers: "peer delivery" refers to the amount of formal sessions delivered by the peer workers, while "peer development" refers to the extent to which the program focuses on peer educators' personal development. In the case of marginalized or disadvantaged groups, peer development should be highlighted, while peer delivery could be emphasized among peer educators with professional orientation (Shiner 1999).

Summarizing the different approaches, peer education could be defined as a process carried out within members of the same social group, with the purpose of educating each other by sharing information and attitudes in connection with a certain issue (Gould & Lomax 1993, Svenson et al. 1998, Shiner 1999, Turner & Shepherd 1999, Parkin & McKeganey 2000).

The rise of peer education

There have been many peer education initiatives in the course of the history. According to some authors, peer education can be traced back to the ancient times, to Aristotle and to Sparta (Wagner 1982, Turner & Shepherd 1999). The first relevant case of peer education about health issues was organized to prevent the Asian flu epidemic at the University of Nebraska, Lincoln in 1957 (Helm et al. 1972, Sloane & Zimmer 1993, Turner & Shepherd 1999). From the 1970s, as the perception of health-related issues changed by emphasizing the importance of lifestyle patterns and individual responsibility, the popularity of peer education has considerably increased. Several peer education programs have been initiated in the college campuses in the US (Sloane & Zimmer 1993). In the 1970s and 1980s, peer education projects focused on risk behavior such as smoking and substance misuse. In the past three decades, sexual education has become more significant in preventing sexually transmitted diseases, especially HIV (Gould 1993, Sloane & Zimmer 1993, Turner & Shepherd 1999, Parkin & McKeganey 2000).

Following the western countries, peer education became more prevalent in developing countries as well. Nowadays, most of the publications on peer education are about programs in African countries. In the case of developing countries, where the healthcare systems are less advanced, peer education can be a sufficient way of health education (Hart 1998, Parkin & McKeganey 2000).

The theory of peer education

It must be noted that in the case of peer education practice preceded theory. The process and virtue of peer education cannot be explained by a single theory although each of the connected approaches provides important elements for understanding it.

Damon (1984, 1989) summarized the theories of developmental psychology connected to peer tutoring, peer collaboration, and cooperative learning. Piaget (1965) highlights the socio-cognitive conflicts generated in peer discourse, Vygotsky (1978) spotlights the internalization of intellectual processes, and Sullivan (1953) emphasizes the co-construction of new ideas in the process of peer education (Damon 1984, 1989). In their review, Milburn (1995) and Turner and Shepherd (1999) draw attention to six theories altogether which are related to peer education.

One of the most-cited theories related to peer education is Bandura's Social Learning Theory. This psychological theory states that role modelling is the key element of peer education. The target group observes the behavior of peer educators and adopts it. The influence depends on role model credibility, which is strongly connected to peer educators' prestige in the group. Reinforcement is also an important component of the theory. Since peer educators spend more time and have more contacts with their peer group, the patterns of behavior can be reinforced (Bandura 1977, Kelly et al. 1991, Klein et al. 1994, Milburn 1995, Turner & Shepherd 1999).

Sarbin and Allen's (1968) theory stresses the importance of social roles and role expectations. According to Role Theory, peer educators conform to the expectations of the tutors, and, similarly, members of the target group will behave appropriately. This concept underlines similar cultural factors as important determinants of the success of peer education (Sarbin & Allen 1968, Turner & Shepherd 1999).

The most popular sociological theory describing peer education is the Differential Association Theory, which highlights the importance of social environment. According to Sutherland and Cressy's (1960) concept, individuals acquire all the habits in social situations. Although the theory was originally applied for crime and the transfer of bad habits, it assumes that good behavior could be learned through social relations, as well. It is important to emphasize that adapting habits works only in the case of a close network since individuals learn behaviors from people who are important and reliable for them. For that very reason, the relationship between peer educators and the target group determines the effectiveness of the process (Sutherland & Cressy 1960, Milburn 1995, Turner & Shepherd 1999).

Cohen (1955) emphasizes the integration of a cultural dimension to the Differential Association Theory. There are numerous subcultures in a society

which expect special norms, values, and behaviors from their members. The Subcultural Theory may provide important aspects in the case of peer education for special target groups (Cohen 1955, Turner & Shepherd 1999).

The Social Inoculation Theory also spotlights social factors in explaining the process of peer education. According to McGuire (1968), peer pressure is crucial in forming adolescents' behavior even if it could work both as a positive and a negative influence (McGuire 1968, Turner & Shepherd 1999).

The Communication of Innovation Theory (Rogers & Shoemaker 1971) or Diffusion of Innovation Theory (Rogers 1983) provides important aspects for peer education practice, as well. The rate of adopting innovations (or the content of a peer education project) in a community depends on many factors. Innovation spreads with a great efficacy when the source's and the receiver's attributes are similar. On the one hand, change agents or opinion leaders (or peer educators) should be similar to the target group; on the other hand, they should own a higher but not too superior status (Rogers & Shoemaker 1971, Rogers 1983, Turner & Shepherd 1999).

Pros and cons of peer education

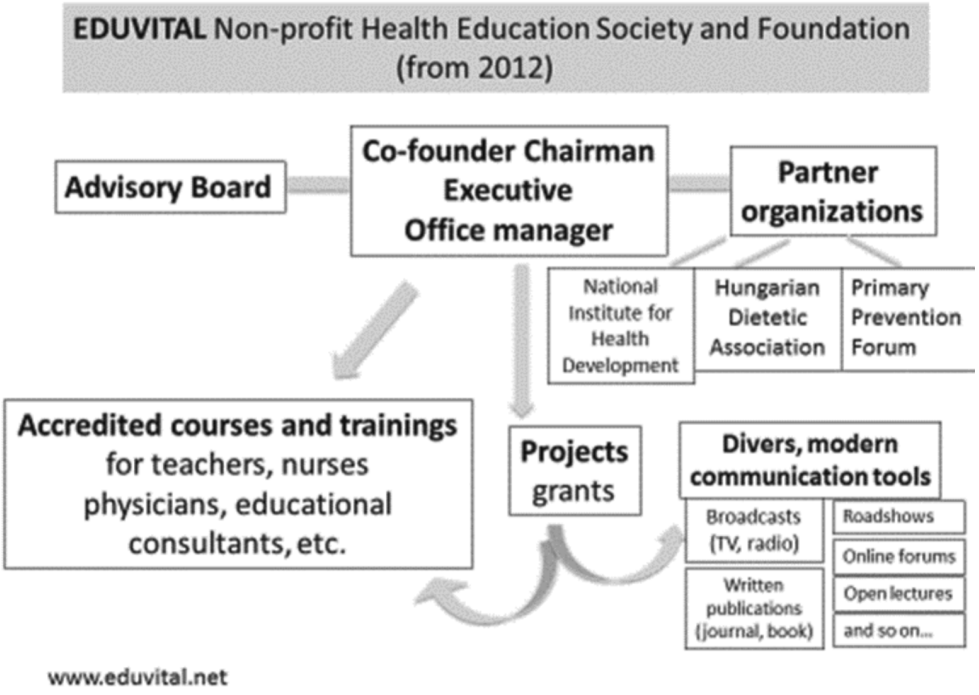
The popularity of peer education projects is based on its numerous advantages. First of all, according to the above-cited theories, the effectiveness of peer education can be explained by several psychological and sociological theories (Sloane & Zimmer 1993, Milburn 1995, Turner & Shepherd 1999). In addition, the methodology is beneficial for peer educators as well in the sense of prosocial behavior, self-esteem, and empowerment (Klein et al. 1994, Milburn 1995, Sawyer et al. 1997, Turner & Shepherd 1999, Parkin & McKeganey 2000). Peer education provides access to hardly reached populations, too (Turner & Shepherd 1999). Last but not least, peer education is considered a cost-saving method, especially in the field of health development (Sloane & Zimmer 1993, Milburn 1995, Hart 1998, Parkin & McKeganey 2000, Price 2009).

Even so, peer education has some weak points, as well. There are still definitional uncertainties about peer education, not just in terms of the applied methodologies but also in the interpretation of peer (Milburn 1995, Shiner 1999). The wide variations of peer education initiatives make the comparison of these programs almost impossible (Lindsey 1997, Shiner 1999, Mellanby et al. 2000). Furthermore, the real effectiveness of peer education projects is rarely measured in a valid and reliable way (Parkin & McKeganey 2000, Harden et al. 2001, Tolli 2012, Southgate & Aggleton 2016). Another concern what peer education programs face is controlling the motivation of peer educators though motives have a great influence on the process (Klein et al. 1994, Milburn 1995).

The EDUVITAL NET and the STAnD Program

The EDUVITAL Non-Profit Health Education Society (EDUVITAL NET, www.eduvital.net) was founded in 2012 with the aim to popularize modern and comprehensive knowledge on conscious lifestyle and healthy living. Therefore, the popularization of the so-called 4P strategy of systems medicine (preventive, predictive, personalized, and participatory medicine) aims at raising people's interest in modern harmonious lifestyle.

As shown in *Graph 1*, EDUVITAL NET is characterized by constructive cooperation and the teamwork of professionals.



Graph 1. *Operative structure of EDUVITAL Non-Profit Health Education Society (www.eduvital.net)*

With a multidisciplinary professional background, EDUVITAL NET provides complex, comprehensive, and reliable information on modern basic (epi)genetics, environmental awareness, nutrition, culture of movement, including the most important questions of school health, mental health, psychosomatic disorders, and healthy aging.

The health education program is primarily recommended to dedicated opinion formers who can influence the largest part of the society in their

everyday practice, such as pre-school and school teachers, school psychologists, healthcare professionals (e.g. family doctors, nurses, sociologists, social workers), representatives of non-governmental (minority and patient) organizations, to whom EDUVITAL NET offers modern, useful, and practical knowledge. A wide variety of materials is formulated to reach various age-groups from kindergarten age to early adulthood (3–20 years of age).

Moreover, one of the major aims of EDUVITAL is to work out and to adapt educational programs and pedagogical, teaching methods approved so far in other countries. The primary goal of the present activity is to harmonize the so-called "peer education model" (see later in details) with the more traditional frontal teaching models and renew them by the implementation and dissemination of more effective pedagogical solutions. In line with the international scientific trends and the grant announcement of the Hungarian Academy of Sciences, we felt motivated to prompt the project proposal of EDUVITAL NET.

The primary purpose of the STAnD Program (Study, Teach, Understand)[2] is supported by the EDUVITAL NET network. The primary aim of this program is to teach children attending kindergarten, primary and secondary school how to lead a healthy lifestyle and develop a health-conscious behavior with the help of a new methodology. Besides, in the long term, the program prepares the national and international introduction of this new pedagogical methodology. The most important aim of this conception is to involve the older generation of students into educating and shaping the attitudes of the younger ones, a process which is professionally tutored.

According to our view, which is underlined by theoretical concepts, international surveys, and implemented pedagogical practices (Sloane & Zimmer 1993, Turner & Shepherd 1999, Harden et al. 2001, Tolli 2012, Feith et al. 2016):

– in younger age-groups, children who are a few years older could become attractive personal "models" to follow for the younger ones (Damon 1984, Adamchak 2006);

– in health development work – beyond the openly apparent health-educational intention –, it is very important that a non-conscious, so-called latent impact also exists, in the case of which the responsibility of a person transferring the knowledge provides a leading behavioral pattern (Sutherland & Cressy 1960, Sarbin & Allen 1968, Bandura 1977, Klein et al. 1994).

The STAnD Program builds up its know-how of knowledge transfer in health science topics along a specific line of logic and methodology. The primary aim of the program is not only knowledge transfer but internalizing the knowledge and making it appear in a way that it could become exemplary, teachable, and likeable at the same time for youngsters. In line with this, the program pays special

2 The Hungarian version of this program is the "TANTUdSZ", the word is an acronym, which includes the beginning of the following words, in Hungarian: Study, Teach, Understand.

attention to the social-cultural factors characteristic of the target population, which precisely outline the necessary education and teaching methodology, a wise selection of which fundamentally determines the efficacy of teaching (Cohen 1955, Milburn 1995). In other words, modern and well-chosen prevention topics based on healthcare are insufficient by themselves; it is indispensable to complete them with the suitable pedagogical methodology, communicational technology and strategy as well as action plan. Thus, in order to realize an efficient health promotion – a health-education prevention program in addition to healthcare professionals –, we need experts who are professionals in practical pedagogical methodology and innovative education techniques and teaching methods.

The goals of the program are the following:

– to shape the lifestyle and health behavior of young people with the help of special educational methods that are suitable for their age, enjoyable and acceptable for them, and lack the overwhelming theoretical presentations with lower efficiency;

– to form an interaction between age-groups in public and higher education institutions and to strengthen the responsibility that older ones feel towards their smaller peers;

– to ensure real regional practice for senior students at higher education institutions in healthcare and pedagogy with the aim of building bridges between present and future healthcare professionals and those working in education both presently and in the future;

– to make a lively conversation and interactive cooperation between various higher education institutions of healthcare and teacher training;

– to create a socially useful opportunity in community service work needed for secondary school graduation for secondary school students in grades 9–11, which is valuable both from a health prevention and a pedagogical point of view;

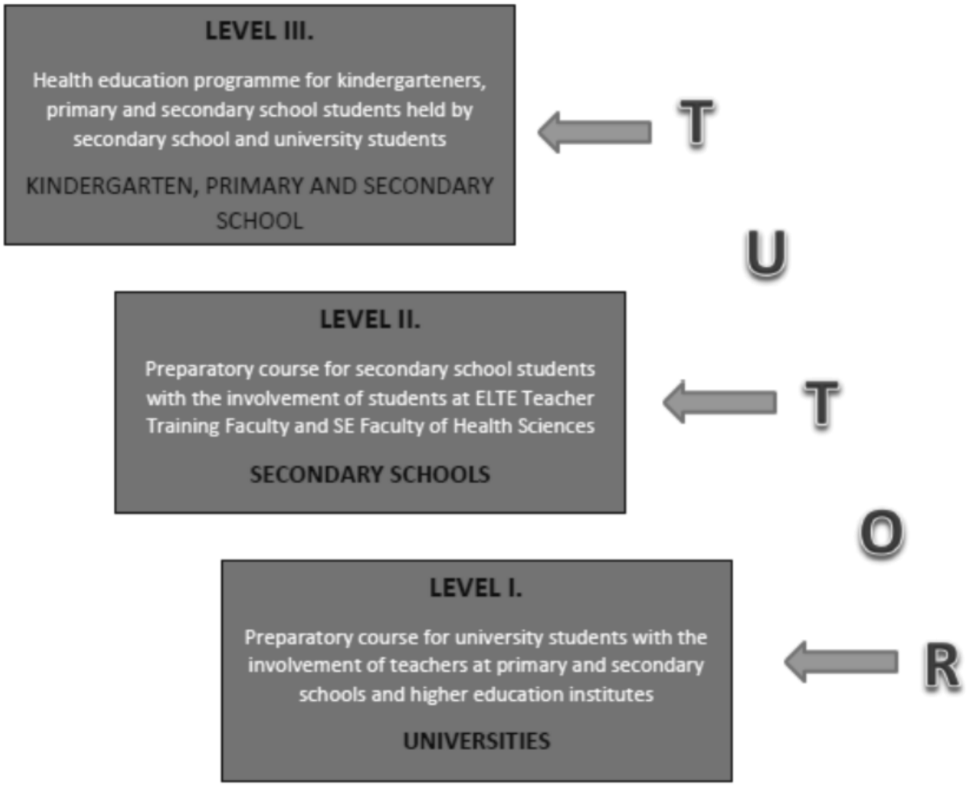
– to initiate and work out creative, innovative, and age-specific health education techniques and methodological recommendations as a result of the program;

– to make an impact assessment in connection with the efficiency of the program based on validated tests.

The STAnD Program can be divided into two branches: 1) an intensive higher education program for university students by teachers of health and pedagogy sciences (preparatory course) and 2) a health education program for children and young adults (aged 3–20 years) by students and peer educators under the supervision of tutors (peer education program).

The recruited students of the preparatory course are trained in up-to-date health, developmental psychology, and pedagogical knowledge, together with communication, conflict management, and project management skills. Two universities – one in the field of medicine and health sciences and one in the field of pedagogical sciences – may ideally organize an elective course.

The approaches to teaching can be categorized into teacher-centered and student-centered models. In the teacher-centered model, the teacher has a primary role, and the students (more or less) passively receive information via lectures. In this teaching method, student learning is measured by objectively scored tests and assessments. In the student-centered model, the teachers and students mutually have an active role, and the teacher only coaches and facilitates student learning. Formal and informal forms of assessment (e.g. projects, student portfolios, student presentation) measure the overall comprehension and acquisition of the material (Wright 2011).



Graph 2. *The structure of the STAnD program (Feith et al. 2015)*

We do not prefer teacher-centered methods in health education programs; so, our preparatory course applies active learning as a teaching method to involve students more directly in the learning process. We do support the priority of active learning, which is why we require the active participation of each student at all levels of the program. However, some students as well as teachers find it difficult to adapt to this learning and teaching technique because of their previous routine learning/teaching experience.

Students and peer educators who work together in teams with tutorial support are responsible to implement all interventions. The optimal team size is 4–6 higher education students (from institutions of teacher training and health sciences) with 2–3 secondary school students. Students and peer educators are permanently supported by tutors from universities, and they are expected to continue their work with formal tutorial support. They are unpaid volunteers, but they receive education credits for taking part in the teaching program.

Our peer education programs are based on different target education levels: kindergarten (3–6 years), elementary school (7–14 years), and secondary school (15–20 years).

The complex health education program is made up of three levels that are interdependently based on each other (*Graph 2*).

Level I

Level I is the preparatory phase, which is an extra training in healthcare and teacher-training higher education institutions, a practice-oriented course shared by the institutions, and it is organized for senior students. The basic goal of this training is to prepare the students in the program to be able to help secondary school students to conduct playful health education programs in the chosen health prevention topic (e.g. hand hygiene, fluid consumption, doing exercises) with constant professional support and supervision (e.g. school nurse and/or university or secondary school teacher). Students can also get mutual insight into the fields of one another beyond the practical knowledge suitable for their chosen future profession: teacher-training students into healthcare and healthcare students into pedagogical methodological studies.

The elective subject is not based on conveying theoretical knowledge that prefers frontal education methodology, but instead it builds on project-based education with a special methodology. In addition to innovative educational methods and cooperative learning techniques, the students' own ideas and proactive suggestion for realization receive special attention. We use a diverse range of active learning activities in our preparatory course: class discussion, demonstration, think-pair-share activity, collaborative learning group, student debate, small-group discussion, class game, technology-based learning (e.g. kahoot learning game), gallery walk, student presentations (e.g. pecha kucha presentations), and the project method.

In the STAnD Program, the process of working collaboratively happens in the teams of students and peer educators – so, making teams is a crucial point of our program. The members of the team have to cooperate, work together, and manage any possible conflicts between one another or the children they work with. Therefore, the initial course intends to build and develop successful

work teams with various group-building activities (e.g. icebreaker games) and special group-building project tasks, and it focuses on the competence, roles, and responsibilities of team members, the clear goals of the program, and the expectations on the part of the executive leadership.

The program gives an opportunity for students in higher education to gain a large number of ECTS[3] and professional practice in connection with their future work, under constant professional control.

Level II

The next level of the STAnD Program is the preparatory training in health prevention for secondary school students. Only those university students who have successfully finished the training of the preparation level can moderate this. It is necessary to have a multidisciplinary team consisting of healthcare students knowledgeable in the given health education topic and teacher training students who understand the educational methodology compatible with the team's health education goals and objectives. The program is run by constant professional tutorial support, in the presence of a so-called tutor. The aim of the preparatory course is to enable secondary school students to organize playful and creative programs for kindergarteners and primary school students together with the university students present in the health prevention topics determined collectively and accepted formerly.

Although the preparation for project work appears as the basic purpose, the program provides a fair opportunity for secondary school students to strengthen their theoretical knowledge connected to the topic of health prevention or make up for the lack of it (through the means of free conversation).

Participation in the preparatory training can be taken into account when considering the students' community service work, but it is also possible to finish all the compulsory lessons inside the framework of one program. Taking part in this program also enhances creativity, teamwork, and responsibility towards the younger ones.

Level III

Secondary school and university students organize playful age-specific health education programs that are based on a creative methodology in kindergartens and primary and secondary schools, under close professional supervision. The most important is that all three age-groups take part in this active prevention program planned and conducted by students.

3 European Credit Transfer and Accumulation System

As we have emphasized previously, the STAnD Program uses active learning as a teaching method, so the kindergarten- and school-based prevention programs are carried out by sportive, creative, and age-specific teaching methods. The activities help to show the fun side of learning, and so the most common activities are games. Furthermore, the use of simple science experiments is also a great way to introduce the importance of positive health behaviors to children and youngsters. Also, creative representations (e.g. recognizing objects with sense organs, drawing and painting, making models), drama activities, literature (e.g. listening or writing stories, poems about health issues), music (e.g. movement for music, singing songs), and classifications (e.g. exploring healthy and unhealthy habits, describing the characteristics of things) are used as teaching techniques.

The younger ones could freely ask any questions throughout the project work, and thus they could learn from the older students in an entertaining way that does not happen in the conventional educational framework. Since the older ones could appear as examples to follow for the smaller children, we suppose that this program could reach a positive effect, which could be beneficial for both younger and older age-groups.

The research methodology of the STAnD conception

As we have mentioned above, the effectiveness of peer education programs has not been evaluated systematically in a valid and reliable way in most programs (Parkin & McKeganey 2000, Tolli 2012, Southgate & Aggleton 2016).

The STAnD program intends to measure the expectations and satisfactions of students, peer educators, and tutors as well as the effectiveness of the training programs and the impact of the health promotion interventions. Due to the low number of previous scientific measurements and the difficulties of evidence-based health promotion programs, developing reliable and valid measurement instruments is a complicated and complex challenge in this field. In addition, difficulties are liable to occur in the measure system as well due to the wide range of the age-groups and the diverse socioeconomic statuses of the target groups.

Research methods and measurements across the STAnD vary by aims and target population. In the STAnD program, we use mixed research methods: a combination of quantitative research (structured questionnaires with closed-ended and some open-ended questions with comparative and non-comparative scaling techniques) and qualitative research methods (focus groups). The system of the quantitative research is presented in *Table 1*.

Table 1. *Types and dimensions of questionnaires in the STAnD health education program*

	EVALUATION OF…									
	…the demographic characteristics	…the motivation	… the future plans (career and family)	… the evaluation of the training program	…the attitude regarding health education	… the attitude regarding peer education	… the STAnD program	… the knowledge of prevention topics	… the attitudes	… the health behavior
Questionnaires of students										
– input	X	X	X		X	X			X	
– evaluation of training programs				X						
– output						X	X		X	
Questionnaires of tutors				X			X			
Questionnaires of school teachers					X	X	X			
Questionnaires of peer educators										
– input	X	X	X		X	X			X	
– output						X	X		X	
Questionnaires of target population										
– before intervention	X							X	X	X
– after intervention							X	X	X	X
– intervention in 4 months								X	X	X
Questionnaires of control groups										
– input	X							X	X	X
– after intervention in 4 months							X	X	X	X
Questionnaires of target population parents	X				X	X			X	X

The STAnD research measures: 1) to what extent our program has been implemented as planned, by measuring participants' satisfaction and quality assurance (process evaluation); 2) the immediate short-term effects and reach of our health education program (impact evaluation); and 3) long-term effects as to whether our program has achieved its goals (outcome evaluation).

Process evaluation

Before the STAnD program, the students and peer educators are asked about their previous peer education experience, their expectations and plans about the health education program, their attitudes and beliefs regarding the peer education method, and their motivation factors to join the course, by an anonym electronic questionnaire with the help of a free online survey software. Questions

also include demographic characteristics of the respondents and items related to the chosen profession, future career, and family plans.

Training and supervision of students and peer educators is an important factor in intervention effectiveness. Therefore, over the intensive higher education training, we measure the participants' (students' and tutors') satisfaction by anonym paper-based questionnaires lesson by lesson. Respondents are asked to evaluate different statements about the quality and effectiveness of the training program on a five-point Likert scale (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree). Statements measure 1) to what degree participants react favorably/unfavorably to the training (useful, valuable topics; quality of training organization; recommendation of the course; etc.) and 2) to what degree participants acquire the intended knowledge, attitudes, skills, and confidence. After respondents have completed the questionnaire, each statement is analyzed separately per educational day and collectively (as a continuous progression of the training from the first lesson to the last one).

Following the STAnD program, the students and peer educators evaluate 1) what they learned during the training and the health education program and 2) which outcomes are the most directly linked to the training program (e.g. increased engagement with peer education and/or the level of knowledge; a lot of useful experience, information for the future profession). We also measure the significant changes in the students' and peer educators' attitudes and beliefs regarding the peer education method. Structured questionnaire and focus groups are used as research methods.

Impact evaluation

The immediate short-term effects and changes of the STAnD program can be detected with the help of questionnaires among the target population (3–20 years of age). Our questionnaires focus on the changes in the level of knowledge, health behavior, and attitude before and after the health education interventions in four different prevention topics: exercise and physical activity, healthy eating, mental health, and hygiene. We make experimental groups and control groups in every educational stage (from early childhood education to secondary education) to measure the effectiveness of preventive interventions. We pre-test the members of experimental and control groups prior to the intervention. Next, we manipulate the independent variables by using 4- or 8-lesson peer education programs in the experimental groups and not using any new teaching techniques for the control groups. After the intervention, we test again the members of experimental and control groups to compare the effectiveness of preventive interventions between the groups by sex, socioeconomic status, educational stage, prevention topic, and length of intervention.

Furthermore, since the educational program and the learning process are recorded by both the students and peers of the STAnD program, we are able to compare the effectiveness of the interventions in the different pedagogical methods.

In addition, the effectiveness of the STAnD program is also measured by the parent respondents via an anonym electronic questionnaire.

Teachers evaluate the quality of the program, but we also test their attitudes and beliefs about peer education programs.

In our questionnaires of the target population, we use some items of various validated (HBSC, WHO 2002; PISA, OECD 2015; EHIS 2014) and non-validated surveys (HHP Hungary 2015, HCS Hungary 2015) which we have filled in with our own questions and response scales. One of our important goals for the future is to validate our items.

Questions include demographic characteristics, self-perceived health status, health behavior, items related to the level of knowledge, health behavior, and attitude in the above-mentioned prevention topics, and the level of satisfaction with the STAnD program. Focus groups are also used as a qualitative research method at the primary and secondary educational stages among the child participants of the health education program.

Outcome evaluation

Our program also examines the long-term effects of the STAnD program – so, the members of the experimental and control groups are re-tested in four months. The aim of this survey is to detect whether the health education program has achieved its goals. We use the same items of questionnaires (without measuring the program satisfaction) to compare the results of the different times.

Conclusions

Modern and innovative health education is a complex pedagogical challenge as it involves numerous scientific fields (biology, health pedagogy, psychology, health sociology, information technology, etc.).

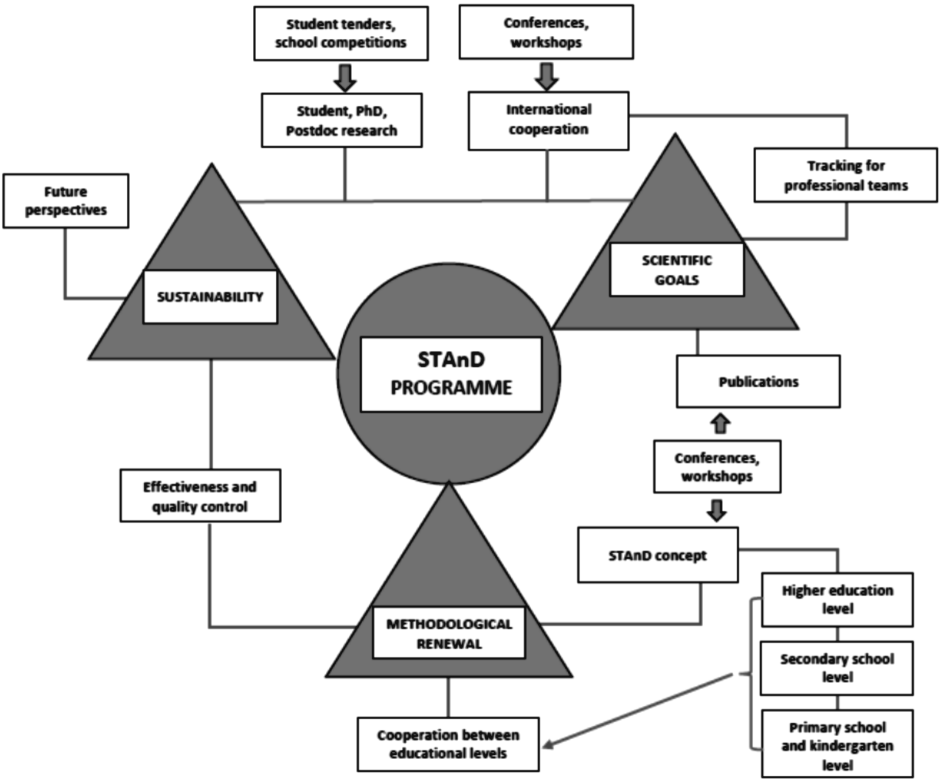
The primary goal of MTA-SE Health Promotion by Peer Education Research Group is to increase health consciousness and the sense of responsibility among the youth, to enhance the efficacy of school health programs with the detailed elaboration and launch of a new pedagogical methodology, the STAnD program, in Hungary and Romania (in Transylvania).

Our methodological conception is based on scientific evidence (Evidence-Based Education, EBE). The main point of our pedagogical approach is to involve

students and peer educators in children's and youngsters' (3–20 years of age) health education within the frame of a professional tutorial system.

The young educator participants can develop many skills upon the successful completion of the STAnD program. These are defined in terms of learning outcomes: cognitive skills (critical, reflective, creative thinking, etc.), methodological skills (time management, problem solving, decision making, education program planning and implementation, digital skills, etc.), and social skills (cooperation with peers and tutors, interpersonal communication with peers and younger children, teamwork, conflict management and negotiation, etc.).

The multidisciplinary STAnD is a really complex program, as shown by *Graph 3*. Sustainability, academic aims, and pedagogical reform of health education programs are the most important keywords.



Graph 3. *Highlighted targets and connections in the STAnD Program*

We believe that our health education program with the new efficiency-oriented and science-based methodology will contribute to raise health awareness, to provide better knowledge, and to alter the attitudes of younger generations.

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Ethical approval

Our research is morally acceptable and we follow the World Medical Association's Declaration of Helsinki and requirements of all applicable local and international standards. The Hungarian Medical Research Council Research Ethics Committee has approved this research (No 18241-2/2017/EKU).

Conflicts of interest/funding

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